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Development of technology for state registration signs of the vehicles recognition in conditions of low resolution on the basis of gradient busting and convolutional neural networks

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Abstract

© Published under licence by IOP Publishing Ltd. This paper presents the technology of characters on the vehicle license plate recognition. The Viola-Jones method is used for distinguishing the area of the license plate on the basis of pre-trained Haar cascades. Convolutional neural networks analyzing the selected frames are used for recognition. Training procedure of neural networks is carried out through the created synthetic database containing characters with various types of distortion. The efficiency of neural network training was achieved due to the possibility of a sampling formation with the almost unlimited dimension, modeling of distortions which are rarely found in a real sampling due to its limitations, the possibility of forming a mixed sampling including both synthetic and real data. The necessary methods of augmentation and preprocessing for synthetic and real data are implemented, based on the resolution of the video camera. The results obtained in this work can be used for character recognition in conditions of low resolution of the video camera, distortions and lack of initial data.

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